CLAIMS

1. An x-ray imaging system comprising:

a gas detector configured to retain a volume of gas, said gas detector having a first detection circuit corresponding to a first region of the gas and a second detection circuit corresponding to a second region of the gas, said first detection circuit being adapted to provide a first signal indicative of an intensity of x-rays radiating into the first region of the gas, said second detection circuit being adapted to provide a second signal indicative of an intensity of x-rays radiating into the second region of the gas, the first region of the gas being different than the second region of the gas.

2. The x-ray imaging system of claim 1, wherein said gas detector includes a chamber and the volume of gas is retained within said chamber.

3. The x-ray imaging system of claim 2, wherein said chamber engages said substrate and said first detection circuit and said second detection circuit are arranged between said chamber and said substrate.

4. The x-ray imaging system of claim 3, wherein said gas detector includes an electrode, said chamber is arranged between said electrode and said substrate, and said electrode is adapted to apply a potential difference across the gas arranged in said chamber.

5. The x-ray imaging system of claim 2, further comprising:

a first gas reservoir selectively, pneumatically communicating with said chamber; and

a second gas reservoir selectively, pneumatically communicating with said chamber such that gas from either said first gas reservoir or said second gas reservoir can be selectively provided to said chamber.

6. The x-ray imaging system of claim 1, wherein said gas detector includes a first chamber and a second chamber, the volume of gas is retained within said first chamber and said second chamber, the first region of the gas is defined by said first chamber, and the second region of the gas is defined by the second chamber.

7. The x-ray imaging system of claim 6, wherein said first chamber and said second chamber pneumatically communicate with each other.

8. The x-ray imaging system of claim 6, wherein said gas detector includes an x-ray stopping component arranged between said first chamber and said second chamber, said x-ray stopping component being adapted to absorb x-rays.

9. The x-ray imaging system of claim 1, wherein said first signal corresponds to at least a first pixel and said second signal corresponds to at least a second pixel.

10. The x-ray imaging system of claim 1, further comprising:

an image processing system configured to receive said first signal and said second signal, said image processing system being further configured to generate first pixel data corresponding to at least a first pixel from said first signal and second pixel data corresponding to at least a second pixel from said second signal.

11. The x-ray imaging system of claim 10, wherein said image processing system includes a display device and is further configured to render the first pixel data and the second pixel data on said display device.

12. The x-ray imaging system of claim 1, further comprising:

means for applying a potential difference across the volume of gas.

13. The x-ray imaging system of claim 1, further comprising:

means for changing a pressure of the volume of gas.

14. The x-ray imaging system of claim 1, further comprising:

means for changing the gas from one type of gas to another type of gas.

15. A method for imaging with the use of x-rays, said method comprising:

providing a volume of gas;

defining a first region of the gas and a second region of the gas, the first region of the gas being different than the second region of the gas;

generating a first signal indicative of an intensity of x-rays radiating into the first region of the gas, the first signal corresponding to at least a first pixel; and

generating a second signal indicative of an intensity of x-rays radiating into the second region of the gas, the second signal corresponding to at least a second pixel.

16. The method of claim 15, further comprising:

rendering the first pixel based on the first signal; and

rendering the second pixel based on the second signal.

17. The method of claim 15, wherein the first region of gas is defined by a first chamber and the second region of gas is defined by a second chamber.

18. The method of claim 15, wherein the volume of gas is retained within a chamber; and

further comprising:

changing a pressure of the volume of gas within the chamber.

19. The method of claim 15, further comprising:

providing an object to be imaged, the object being arranged at least partially between a source of x-rays and the volume of gas;

generating additional signals indicative of the intensity of x-rays radiating into the first and second regions of the gas; and

generating sequential images corresponding to the object based on the additional signals.

20. The method of claim 19, further comprising:

moving the object relative to the volume of gas while the object is being radiated.

21. An imaging system comprising:

a gas distributed to define plural imaging volumes arranged in an array, said gas being susceptible to ionization;

an ionization detector for providing indications of ionization of said gas for at least some of said imaging volumes; and

an image generator for converting said indications into an image.

22. The imaging system of claim 21, further comprising:

an x-ray source for ionizing said gas within said imaging volumes as a function of characteristics of an object being imaged.

23. The imaging system of claim 21, wherein:

said image generator includes pixels for displaying said image; and

at least some of said imaging volumes correspond to at least some of said pixels.

24. The imaging system of claim 21, wherein at least some of said imaging volumes are separated from others of said imaging volumes.

25. The imaging system of claim 21, wherein said imaging volumes are defined by chambers, each of said chambers being spaced from adjacent ones of said chambers.

26. The imaging system of claim 25, further comprising:

gas passages formed between at least some of said chambers, said gas passages enabling adjacent ones of said chambers to communicate pneumatically.

27. An imaging method comprising:

detecting ionization at respective gas volumes in an array of gas volumes; and converting the ionization detected into an image.

28. The method of claim 27, further comprising:

irradiating an object with x-rays so as to ionize at least some of said gas.

29. The method of claim 27, further comprising:

providing an object to be imaged;

irradiating the object with so as to ionize at least some of said gas;

generating first signals indicative of an intensity of ionization in a first of the gas volumes;

generating second signals indicative of an intensity of ionization in a second of the gas volumes; and

generating sequential images corresponding to the object based on the signals generated.

30. The method of claim 29, further comprising:

moving the object relative to the gas volumes.

31. The method of claim 29, further comprising:

providing a first pixel;

providing a second pixel;

rendering the first pixel based on the first signals; and

rendering the second pixel based on the second signals.